

## Accepted Manuscript

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PII: S0166-4328(18)30036-6  
DOI: <https://doi.org/10.1016/j.bbr.2018.04.033>  
Reference: BBR 11399

To appear in: *Behavioural Brain Research*

Received date: 10-1-2018  
Revised date: 27-3-2018  
Accepted date: 20-4-2018

Please cite this article as: Zhang M, Xu W, He G, Zhang D, Zhao X, Dai J, Wu J, Cao Y, Wang Z, Wang L, Qiao Z, Maternal nicotine exposure has severe cross-generational effects on offspring behavior, *Behavioural Brain Research* (2018), <https://doi.org/10.1016/j.bbr.2018.04.033>

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## **Maternal nicotine exposure has severe cross-generational effects on offspring behavior**

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### **Highlights:**

- Maternal pre-pregnancy nicotine exposure could also lead to depression-like behaviors in the offspring rather than have to through the uterine environment.
- Biparental pre-pregnancy nicotine exposure mainly caused a depressive phenotype among F1 mice, and a few with hyperactivity.
- The impact of maternal nicotine exposure on the behavior of the offspring was far severer than that of paternal exposure.
- These effects appear to be mediated via disruption of the balance between GSK3 and p-GSK3 by nicotine.

### **Abstract:**

Our previous studies showed that paternal nicotine exposure can lead to hyperactivity in the offspring. Nevertheless, the cross-generational effects of maternal and biparental nicotine exposure remain unclear. In this study, female and male mice were exposed respectively by

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